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TREATISE OF
METALLICA.

BUT NOT THAT WHICH WAS
published by Mr. SIMON STURTEVANT vpon
his Patent, which is now by order cancelled and made
voyd, by reason of his standing our-lawed at the
time of the grant, and so still continuing,
*and his neglect, and not performance
of the worke.*

WHEREVpon PRIVILEGE, BY
Patent, is granted by the Kings most excellent Ma-
iesty, to JOHN ROBINSON, Esquire, for the making
of Iron, and other Mettals and Materials with Sea-
cole, Pit-cole, &c. for one and thirty yeares. Accord-
ing to which Patent and direction therein, this
Treatise, composed by the same JOHN RO-
BINSON, is published in Print before
the end of Easter Tearme, viz. the
15 of May. 1613.

*And containeth a briefe Explanation, Demonstration, or Dis-
covery of the Inventions priviledged, and the meanes, Instru-
ments, Engines, Furnaces, &c. with the materials, things, and
workes to be made by the said Fowels.*

*The charge of an Iron-worke to worke with Sea-cole, is
set downe in the latter end of this Booke.*

LONDON.

Printed for THOMAS THORPE. 1613.

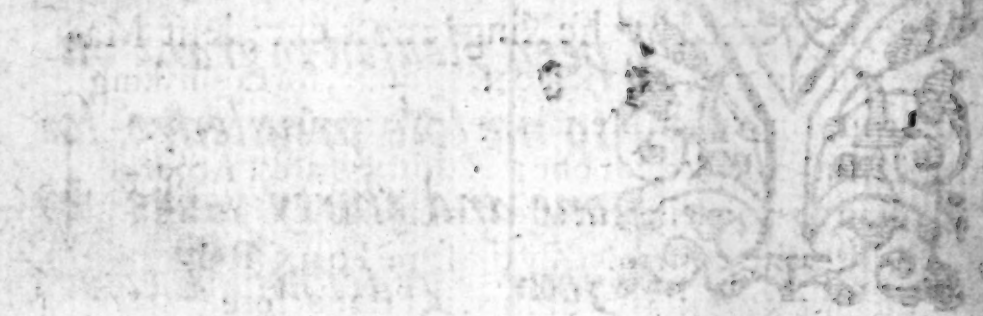
Cum Privilegio.

THE
OF

THE

TO THE

EXCELLENCE



Patent to make and work from

and

to

the

of



TO THE KINGS MOST
EXCELLENT MAIESTY.

Most dread Soueraigne,

Y Our Maiesty hauing
been pleased to grant vn-
to me sole priuiledge for
one and thirty yeares by
your gracious Letters
Patents, to make and worke Iron, other
Mettals, and diuers other materials
with Sea-cole, and such other fewels:
wherein it hath pleased God to blesse my
poore inuentions and endeuours, by ef-
fecting those workes which haue beene
heretofore worthily attempted by others,
though with fruitlesse successe, I held it
my duty vpon publication of these inuen-
tions,

tions, to present the same to your Royall view, humbly beseeching your Maiesty to accept them as a neuer-dying Memoriall of the late most excellent Prince Henry your sonne; whose desire of the publique good (besides many particular fauours which he was pleased to vouchsafe vnto me) was the first motiue and Author to encourage me to make triall, and to accomplish these works, which I hope will proue so profitable to your Maiesty, and so enriching to your Kingdomes, as you will neuer haue cause to repent your gracious fauour and priuiledge herein bestowed vpon me. The Lord of Heauen and Earth blesse and preserue your Maiesty, your most excellent Queene, and hopefull Royall Issue.

Your Maiesties most humble
and obedient Subiect,

JOHN ROBINSON.



TO THE READER



IT is not my purpose to commend my Inuentions of making and working Mettals, and other Materials, and things with Sea-cole, and such other fewels : What I haue performed herein, in that which hath been held most difficult, by making Iron with Sea-cole, is sufficiently knowne, to the full satisfaction of some iudiciall Iron-masters, Founders, and others experienced in Iron-workes, who haue seene one of my Furnaces, and the workes therein done. Yet am I farre from arrogating all to my owne meere Inuention : For howsoeuer the maine workes, and the vse of the priuiledged fewels thereabouts, with the Furnaces, haue beene deuised and acted by my selfe in the workes of most difficulty; yet many Instruments, operations, and meanes Metallicall, being necessarily to be vsed for the better, more easie, and cheape working and effecting the workes, I do willingly acknowledge to the world, that the conferences and informations of many my good friends, who haue beene desirous to further these workes, and the priuiledge granted by his Maiesty to me, haue added much

much to my owne Inuentions, and giuen great light
 and furtherance, by meanes of diuers new-deuised
 operations, instruments, and Engines: Onely thus
 much more I thought good to giue notice; That
 whereas it pleased the late most excellent Prince
 deceased, vpon a grant of priuiledge obtained by
 his meanes for one Maister *Sturteuant*, for the like
 workes, to commit the trust of making and registering
 of all Indentures and Conueyances thereabouts,
 with acquittances vpon all receits of money, or o-
 ther profites thereby to Maister *Ferrour* of Graies-
 Inne, Esquire, his Maiesties seruant, to the end that
 euery aduenturer, and other that was to receiue be-
 nefite thereby, might haue his due without deceit,
 or diminishment, which was also agreed vnto, and
 confirmed to Maister *Ferrour*, by grant of Maister
Sturteuant vnder his hand and seale: which Patent
 is by reason of the neglect of performance by Mai-
 ster *Sturteuant*, and by his standing out-lawed at the
 time of the Patent granted, and still so continuing,
 become forfeited, made voyd, and cancelled. And
 the like priuiledge granted by his Maiesty to me;
 in regard whereof, and for that Maister *Ferrour* hath
 beene my chiefe assistant, and aide, to effect these
 workes, and an eye-witnesse of all my endeouours
 therin. And besides, I know and am priuy, that it was
 alwayes the purpose & intention of the late Prince,
 that vpon my performance of these workes, and
 obtaining his Maiesties grant of priuiledge there-
 vpon, Maister *Ferrour* should make and register all
 Conueyances and Acquittances that should bee
 made, by reason of my priuiledge, as he should haue
 done

done, if Maister *Sturtenants* had remained in force:
I haue therefore authorized Maister *Ferrour*, according-
ly, to make and register the same, giuing hereby
knowledge therof to all whom it may concerne; and
such as shall be willing, or desirous to aduenture, or
deale in, or about any thing concerning ought con-
tained within his Maiesties Letters Patents to mee
made and granted, that they may repaire to Maister
Ferrour at his Chamber in Graies-Inne, or to such
other place as he shall appoynt, wherein to write,
make, and register the said Conueyances, and Ac-
quittances, where they may know of him, in what
sort, and vpon what tearmes and conditions they
shall be dealt with. And because some Aduenturers
with Mr. *Sturtenant*, by his neglect & forfeiture, were
in danger to sustaine losse, such hath been his Maie-
sties Royall care of such as dis-bursed money, to, or
with Maister *Sturtenant*, by, or vpon meere aduen-
ture, to forward the workes, that a speciall clause
and prouiso is contained in the Indenture of Priui-
ledge, to me made & granted, that I am to performe
and vndergoe such order for their recompence and
satisfaction, as shall be held fit in equity by his Ma-
iesties Barons of his Highnesse Court of Exche-
quer. But if such Aduenturers shall bee willing to
make knowne the manner and truth of their Aduen-
tures, to me, or Maister *Ferrour*, and to treat with
vs thereabouts, I doubt not but such conclusion
shall bee made, as they shall not need to make any
further complaint else-where for their reliefe. To
print the whole patent is a worke both tedious and
superfluous; only the Inducement of his Maiesties

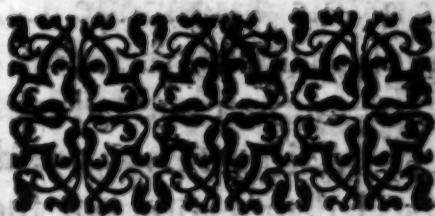
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grant,

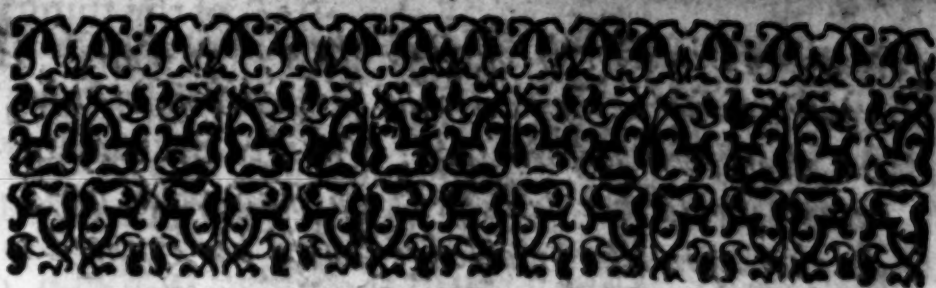
Q
grant, the rearme of yeares, the effect of the things
priuiledged, and the distribution of the profites, is
fit to be made knowne; to which end I haue caused
an Abstract thereof to bee abridged out of the
Indenture, and committed to the Presse, to-
gether with the *Treatise of Metallica*, con-
taining a briefe of the meanes, and
manner of the workes inten-
ded. And so I rest.

Your louing friend,

John Rolington.



THE



THE INDUCEMENT

to his Maiesties grant, made to
Iohn Rouenzon, Esquire, ab-
stracted out of the Indenture of
Priuiledge.



V *P* *O* *N* affirmation by Simon Sturteuant, that hee could performe the workes, and had effected the same in small trials, the same Iohn Rouenzon, made knowne the same to the late Prince his Highnesse, who thereupon, at the humble suit of the said Iohn Rouenzon, obtained Letters Patents of priuiledge to Maister Sturteuant for 31 yeares.

Maister Sturteuant *o* promised to haue performed the workes long since in the said late Prince his owne view; yet neglected it to his Maiesties hinderance of profite that might in this space haue accrued, by endeuours of others.

The late Prince encouraged the said Iohn Rouenzon to make triall if he could performe the workes; who, after many chargeable trials by himselve and
B 2 friends,

friends, satisfactorily effected the same. The said Prince hauing beene graciously pleased to assure him, that vpon such performance, Maister Sturteuants Patent should bee deliuered vp, and made voyd; and thereupon like priuiledge should bee granted to the said Iohn Rouenzon, according to the effect of his Inuentions.

Maister Sturteuant stood out-lawed at the time of the grant to him made, and so still continueth, which was found by office, and his Patent seized, and apprized, and deliuered vp to bee cancelled, which is done, his Patent made voyd, and priuiledge granted to the said Iohn Rouenzon for one and thirty yeares to worke the workes, &c.

The effect of the Priuiledge.

- 1 **S**ole priuiledge to make Iron and all other Mettals, Ash-mettals, Bugles, Tiles, Potters-ware, Concrets of boyleryes, &c. with many other things, with Sea-cole, Pit-cole, Earth-cole, &c. The perticulars of the things are most of them specified hereafter.
- 2 Sole priuiledge for making all Instruments, Engines, and meanes, &c. onely for these workes; which Instruments, &c. are by this new Inuention conuerted to these workes, hauing beene heretofore vsed in other Sciences, Arts, or Mysteries.
- 3 Sole priuiledge for making all the new-deuised Furnaces, Fire-workes, Instruments, Engines, Meanes and Inuentions, either for the working of the workes
with

with the said fewels, or for any other end or purpose
whatsoever.

These are granted in as absolute manner and forme as
they are contained, or mentioned in the Indenture of
Priviledge, or the Schedules thereunto annexed, or
shall be more fully demonstrated, specified, or mentio-
ned in the Treatise of Metallica, to be printed before
the last day of Easter Tearme; which Treatise is
this present Booke.

The distribution of the Profites.

The cleare yearly Profites are to bee divided into 33
parts, whereof the said Iohn Rouenzon is to pay twelue
parts to the Kings Maiesty; five parts to the now Prince
his Highnesse; one part to the Lord Viscount Rochester;
one part the said Iohn Rouenzon is to keepe to himselfe;
And the residue, being foureteene parts, are to be distribu-
ted by his discretion, and by such proportions as hee shall
thinke fit, amongst the Aiders, Assisters, Adventurers,
and Owners of the Workes.

THE
OF METALLURGY

THE UNIVERSITY OF CHICAGO PRESS
PUBLISHED BY THE UNIVERSITY OF CHICAGO PRESS
CHICAGO, ILL. 60637
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THE



THE TREATISE OF METALLICA.

*The meanes whereby the workes are to bee performed,
containing a brieft of the new-diuised Instruments,
Engines, &c.*



THE INSTRUMENTS,
Engines, Deuises, and Meanes
for performance of the workes,
are either *Preparatory* before the
Mettals, or Materials come to be
wrought; or *Preparatory* after the
Minerals, or fewell drawne; or
else are vsed about the workes

themselves.

Preparatory before the Mettals or Materials come
to bee wrought, are the meanes of most easie and
least chargeable getting, and acquiring the Ewers,
Minerals, Mettals, Materials, or Fewell, which con-
sisteth in speedy digging, in quicke sinking of pits,
in speedy remouing of impediments that may hin-
der the digging or sinking of pits; in the easie draw-
ing

THE
OF METAPHYSICS

The subject of this book is the nature of the universe, and the principles which govern its order and harmony. It is a study of the highest order, and one which has occupied the minds of the greatest philosophers of all ages. The author, Aristotle, has treated this subject in a manner which is both profound and accessible, and which has served as a model for all subsequent writers on the subject.

THE
OF METAPHYSICS



THE TREATISE OF METALLICA.

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ing

ing the Ewers, Minerals, or coles out of the pits; and in the speedy and easie lading forth of the water therein, and draining the pits.

Preparatory, after the Minerals or Fewell drawne, are the more easie and speedy carriage; and after that, the making, drying, & nealing of the Furnaces, and preparing some of the Materials, by beating, burning, or breaking; and others by tempering and commixing, forming, moulding, and then drying and nealing, before the worke of burning, or melting be performed.

The Instruments, Engines, Deuises, and meanes vsed about the workes themselues are expressed amongst the new inuentions hereafter mentioned.

There are diuers new-deuised Engines for the drawing of water out of cole-mines, or other mines, which may bee also conuerted to the drawing of fennes, marrish, or moorish grounds; some of which Engines are to go and worke with wheelles, and buckets; others with wheelles and pumpes: other deuises by falles or discents, making waters to mount continually, and may be conuerted to haue passage through pipes, cockes, or conduits, for seruing of Houses, Townes, or Citties: others are new-deuised milnes, to go by labour of men, winde, water, horse, or diuers of them together, to raise Hammers, or Bellows for Metalllicall workes; or to grinde, or breake Metalllicall Ewers, and Minerals into powder; and may bee employed to draining of mines, cole-pits, fennes, marrishes, or to such common vses of grinding, fulling, tucking, &c. that other common milnes are vsed for, and will doe as much with

with lesse charge, toyle, and expence.

A new kinde of artificiall cloth, deuised for Saile-clothes, for the new-deuised winde-milnes, made either of linnen, or wollen, or both mixt together, by a new kinde of weauing, which may be transferred to making of a very broad new kind of Wollen cloth, neuer heretofore vsually made or knowne, in any of his Maiesties Dominions, & will serue for curtaines or hangings, mentioned in the Schedules, annexed to the said Indenture of priuiledge, and may bee so dyed in wooll, and wouen by this new kinde of weauing, and dressed on both sides, that it shall bee of two seuerall colours; one colour (as greene, or any other colour) on the one side; and blew, or crimson, or any other colour, on the other side; the cloth being much finer then any now vsually made, and sauving aboundance of wooll, by vsing lesse in weight, and thereby increasing the number of clothes; and yet as durable, or more durable then the now vsuall broad-clothes, and reasonable cheape to be bought, and are some of them to be made two yards broad, so as a Cloake may be made thereof without seame. The making hereof will set more people (by many) on worke, then the clothing in common vse.

There is a new-deuised Engine which will either with Awgors, bore holes, vnder the clampes of Sea-cole, or Pit-cole, or any other Minerall, or with a raping wheele, make such Rigals that they may fall the easier, and with lesse charge, and toyle of men, and will serue for many other vses.

Certaine new-deuised Engines for the pulling vp of great rootes of trees, or great stones, with one

mans strength at once: which roots and stones may otherwise hinder the speedy digging and sinking of cole-pits, or mines.

A new-devised Engine, or Instrument for sawing of timber for proppes, or otherwise in mines; or for sawing Free-stones, or Fire-stones, or for Furnaces, which with one mans labour will saw as much as fixe or eight men now vsually saw, and may bee conuerted to sawing of boords, or other things, or to raping of Log-wood, Brasill, or other woods for dying.

Diuers new-devised Turne-barrels, or motions for Turne-barrels, for the easie drawing of coles out of the cole-pits, or other minerals out of mines, and may bee conuerted to vnloading, or raising of any thing of great weight, for Shippes, or for building.

Certaine new deuises, or engines to ease Carts, and Waines in carriage of Coles, or other minerals, halfe in halfe; and may be conuerted to Coaches, Caroches, and other carriages; so as two horses may draw as much as foure doe vsually: And by this deuice, and engines, with some other additions, three plowes, in light ground, and two plowes in other ground, may bee made to goe and worke with one man onely, and as few cattell as are now vsed for one plow, ridding twice or thrice as much worke in one day.

A new deuise, engine, or meanes for the easie rowing of Barges and Boats, for carriage of Coles, Mettalls, or any other thing.

A deuice, or engine for the drawing vp such Barges
or

or Boats through weeres or lockes for their speedier passage and carriage.

Certaine new-devised Carriages, Carts, or Waines, to bee made to goe, or trauell alone, by reason of certaine morions, or scrues to bee vsed by one man; and in some a horse may bee set, onely to turne withall: and these carriages will carry thirty hundred weight at once, an ordinary pace, and an vsuall dayes iourney, and may bee conuerted to Coaches, Caroches, and other common carriages.

Diuers new-devised Engines, Instruments, and meanes for the rearing of Hammers or Bellows for Iron milnes, or workes, or other Metalllicall operations, and may be conuerte d to the dressing, rowing, and fulling of cloath; and also to the sawing of timber, so as one man may performe as much as many. And some of these engines will make both Bellows and Hammer to worke at once, and with one and the same engine, and with one mans labour, without winde or water.

A new-devised Engine or Instrument to digge with, which with labour of two men shall performe as much as twenty men, and serueth chiefly for the speedy and easie getting of the fewels of peat, and turfe, and is of excellent vse for the speedy cutting and scouring of rivers.

Diuers new-devised meanes or engines, whereby a breach in any banke, or stoppage, for conueying of water out of cole-pits, or mines, the dambe or poole of any Iron-mill, or other mill, may be speedily, and easily stopped; and may be conuerted to stoppe any breach in the bankes of any rivers, or sea-bankes.

The Presse and mould and Instruments deuised, or vsed for making of Presse-wares.

Diuers new-deuised fire-workes, instruments, or kilnes to put fire into, which are to be made of Iron, or other mettals, or materials, with funnels, or passages to vent the smoake, are deuised to dry and neale furnaces, before full fire be put therein, and serue also to dry potters ware before it be burnt; and may bee of excellent vse in ordinary kilnes to dry malt, starch, hops, saffron, or any such thing, with New-castle sea-cole, or any other sea-cole, or pit-cole; or with any turfe, peat, or slag; so as the malt, or other thing shall be dried exceeding sweet and faire, without sent, taint or touch of the fewell, or any smoake proceeding there-from.

A new-deuised ventible, round, & hollow, with a long spout to be made of some mettall, or potters earth, wherein water being put, and the same placed on a fire, as it heateth, and the water euaporateth by the spout, it maketh a continuall blast to kindle, or increase the fire in furnaces, or fire-workes, and may be conuerted to many other excellent vses; and the same may be so made in seuerall peeces with the top or vpper part remouable at pleasure, so as the lower part being made to stand on feet, may serue at pleasure for a possenet, skellet, or boylatory; and when the top is put on, and well fastened and luted, it may then serue for the ventible to make the blast.

For such of the workes as require light to worke by in the night, being distant from the places where the Furnaces are, there is a new-deuised luminary of glasse, or glasses filled with water, & a candle placed to

to giue light through it, which giueth a very great light a great distance off, with small charge; and may be conuerted to excellent vse, being placed in high places, in crosse-ways, and streets of Citties and Townes, to the sauing of lanthorne, and candle-light, and the auoyding of inconueniences happening by darknesse.

The Description of the Furnaces, and Fire-workes, and Addisements.

Furnaces are either such as are not of diuision, wherein the mettall or materiall, to be melted, or wrought, lyeth together in one place vndiuided: or Furnaces of diuision, wherein the mettall or material to be melted, or wrought, is kept diuided from the fewell in seuerall places; so as no substance of the fewell, but onely the heate and flame thereof can touch the mettall or materiall.

The Furnaces, or Fire-workes of diuision may be made with bellows, or without bellows, as wind-furnaces, which are best, and least chargeable.

These Furnaces may bee made to haue the flame come vp in the middest, with a Cisterne, or Hearth, wherein the mettall lyeth on all sides encompassing the flame; or else the flame may come vp betwixt two, or more Cisternes or Hearths, or else the flame may come vp on one side of the Hearth, or Cisterne, or on both sides, or in seueral angles, or places, without the Hearthes or Cisternes, at pleasure of the owner.

The fewell alwayes lying on grates without the Cisterne or Hearth, through which grates the aire,

The treatise

or winde gathereth, and so maketh the fire to burne, the Ashes falling through the grates.

The Furnaces or Fire-works may be made round, or long, or triangular, or quadrangular, or with more angles, or part circular, or semi-circular, or part angular, or in as many severall formes or fashions as the owner pleaseth; and in euery of them the workes may be wrought, though in some better, or more readily then in others.

The Furnaces may be made with one, two, three, or more Cisternes, or Hearthes, to containe the ewers, or mettals to bee melted, or wrought, so as one, two, three, or more Soves of Iron, or other mettall, may be made to run all out at once, and euery of them of as great or greater weight as any Soves now ordinarily cast.

The Furnaces may bee made either close on the top, with some vent-holes, and so ineerely reuerberatory, the mettals, or materials to bee melted, or wrought lying in the Cisterne or Hearth before it be melted, and is therein melted, and thence run forth.

Or else the furnaces may be made with one, or more funnels, as it were chimneys on the top, or in the sides, or ends, with grates of fire-stone made in the bottōs of those funnels, placed right ouer the Cisternes, or Hearthes: in which funnels the materials, to be melted, may be put, and the flame and fire shall haue only passage through those funnels, there melting the materials; so as they fall melted thence into the Cisternes and Hearthes, where they are cleansed, and thence run forth into Soves.

The Furnaces may be made with out-wings, into which

which the flame may passe by vent-holes, or without such out-wings. These out-wings may serue to roast the Ewre, or for many other purposes.

The Furnaces may be made with conuenient places therein for the Finery and Chaffery; so as one & the same furnace, with one and the same charge of fire, may serue both to melt, cleanse, and fine the metalls, and to do all the works at once, & in one place, that are now done in severall places, by furnace, Finery, and Chaffery; and may bee set vp close at the mine, with an engine to raise the hammer, &c. with one mans labour, there to be vsed without trouble of carriage, and without the charge of any water-milne.

The Furnaces may be made great and fixt for greater works; or small and moueable, for smaller works, and tryals; and by conueying, circling, or twining pipes of metall, or burnt earth, through any of them, through which pipes water may haue passage, the one end thereof beeing fastened on a cocke or conduit, and the other end kept stoppt with a cocke, or otherwise, and opened at pleasure. It may be made to run hot water continually, or so long as the party pleaseth to vse it; and then being remoued, the same cocke or conduit may run cold water againe. All which may be performed with far lesse charge then is now vsed in heating of caldrons, kettles, or receivers of water by Felt-makers, Launderers, or any others.

One and the same furnace may be so contriued and made, as it may do all the workes Metalllicall of burning, melting, fining, &c. the Ewer or Metall: And also

also the worke of any boylery, to gather the concret thereof, or for any other purpose; and also to make a cocke, or conduit run hot water; and also to make Bugles, China worke, and glasse-worke therein. And to bake and burne potters-ware, and other burnt-earthes, or as many of those severall workes as the owner pleaseth to be done at one and the same time, with one and the same fire.

All boylatories of things liquid, and all kilnes to dry Malt, or other things, & all clampes or kilnes to burne tiles, or potters-ware, or any thing of burnt earth (except onely where New-castle Sea-cole is intermixt in burning of bricke) are fire-workes of diuision.

The said mettals of Iron, &c. may bee also made with the said fewels in common Blomeries, Fineries, and Chafferries, but much better in Blomeries, Fineries and Chafferries of deuision, which are of new inuention, not yet vsually vsed about the said workes, wherein the materials, to bee melted or wrought, may be kept diuided, from touch of the fewels.

Certaine new deuises in framing of chimneys, and other things thereabouts, for drying of earthen vessels, before they be burnt, and for drying of concrets made by boyleries; which deuises may be transferred to common chimneys, whereby halfe the fewel, now spent therein, may be saued.

Certaine new-deuised vessels, or caldrons, made of wood, or mettall, or both, for boyling of liquors, or wort for Brewers, or others.

There are certaine Fluxes, and Additaments for the speedier and more perfect melting, separating, and

and purifying of Iron, and other mettals from their slagge, drosse, and cyndar; as transparent or glassy stones, or sand, Crisofall, or Borax, gall of glasse, glasse beaten to powder; and for small tryals of Tyn, or Lead, Soap, or Wax, or some fatty substance, are proper Additraments; and Lead it selfe is fit for separating of other mettals: The slagge of former melted mettals, as the slagge of Iron to melt and purify Iron ^{Eyre} ~~ouer~~, for which also Lyme and ashes of wood, and dust of char-coale, are vsed; and for small trials, Arsnicke, Sulpher, Vitriol, Tartar, Salt-gemme, Salt-niter, and Strybium, some of which may be also vsed in greater workes, for which also Salt-peter is by new inuention deuised to bee made cheape, and in one place continually, without trouble of digging of houses, or Stables, and may bee conuerted to make gun-powder in abundance.

There is also some speciall new deuised Additraments, for the more speedy and perfect separating & purifying of Iron, from the slag, drosse, and cynder, in making of Iron with Sea-coale, or other the priuileged Fewels; which special Additraments are specified and declared in writing, with the descriptions, or models of diuers engins, instruments, deuises, and inuentions drawne in parchment, and remaining in custody of the fore-named *Iohn Ferrouer*.

A new deuised stoue, for the opening and better dressing of Wooll, with a new kind of dressing, and spinning thereof, for a new kind of cloathing.

The Materials and things to bee melted, made, or wrought, by the Fewels of Sea-cole, &c.

ALL Ewers, or Oares, and mettals of Iron, Steele, Brasse, Copper, Lattin, Tyn, Pewter, Lead, Alchimy-ware, Bel-mettals, Candlesticke-mettals, and all other Mettals and Mynerals whatsoever, either simple, or commixt.

All Ash-mettals, Sand-mettals, Bugles, Ammels, and all other things whatsoever, simple, or commixt, to be melted, made, or wrought, or conuerted into any stony, or glassy substance.

All burnt earthes, earthen vessels, stone-pots, earthen-pots, Potters-ware, Tobacco-pipes, pipes of earth, cast Iron, or other Mettall, or stufte whatsoever to conuey water in; pauing-stones, Mantle-trees for chimneyes, pillers, monions for windowes, or other ornaments of burnt earth, artificiall marble, or things of burnt earth like marble; burnt earth like free-stone, or other stone for building, or other vses; tiles, way-earthes, lime, plaisters, the making, moulding, perfecting and burning of certaine white earthen vessels, painted with diuers colours, commonly called by the name, or names of *Faianza* vessel; & a certaine earthen vessell of Iasper-colour, or such as are brought out of the *Straights, Italy, Spaine, France, Germany*, and the low Countries, together with pauing-tiles, chymney-peecees, monions for windowes, and such other things framed and fashioned of earth, not vsually heretofore made in any of his Maiesties Dominions or Countries: and

and all things whatsoever, made, or to be made of earth, and then burnt, or hardened.

All kinde of Presse-ware, to be made by presse and mould, or either of them, and framed or fashioned of earth, or other stuffe or substance.

Bricke may be made with pit-cole, or stone-cole, or any other of the priuiledged fewels, better then with New-castle sea-cole, without danger of that losse which oft happeneth by New-castle cole; which, as it is now vsed, doth many times spoyle much of the bricke-clampe by making it run together in a lumpe.

All boyleries, and hot waters, and all concrets gathered by boyleries, all Copperosses, Allomes, Saltpeter to be made in one place continually, without trouble of digging houses, or stables, being a new inuention. Sugers, Rosins, Gums, Turpentine, Waxes, Tallowes, Sopes, the making, boyling, and perfecting of certaine Sopes, called white Sopes, hard Sope, sweet Sope, and Castle-sope, not vsually heretofore made in any of his Maiesties Dominions or Countries. Oyles, distilled waters, commixtures, and all other boyleries, or dicotions whatsoever, heretofore boiled or heated vsually with wood-fuell, or char-cole.

Conuerting, or making of Iron into Steele, or Copper.

The burning of any weedes, or hearbes, or other thing into ashes; or any stony, or glassy substance for Dyers or Glasse-makers.

Extractions of siluer out of lead, or lead Ewre, or either of them, Conuerting of lead, or lead Ewre in-

to litarge, or into white, or red-lead, or into Cærule.

A new-deuised stufte wherewith ships, boates, or other vessels may be trimmed as cheape as now they are; and shall endure ten yeares together water-tite, without new-dressing, or hurt by mosse, or wormes, so as they run not on grauelly shelues; and will bee exceeding good to preferue all timber-workes from wormes and rotting, a small example, or parcell of the stufte remaineth in custody of Mr. *Ferrour*.

A new deuised hard coniealed stufte, which will make a liquor, or commixture, which will fixe false dying-woods, so as they will endure all cold and wearing trials, and much more; as may appeare by a Certificate made to the right Ho: the Lords of his Maiesties most honourable Priuy Councell, by the Lo: Mayor, and Recorder of *London*, on behalfe, of that friend, by whose information the said *John Ro-venzon* attained to this inuention: An ensample, or parcell of this coniealed stufte remaineth in custody of M. *Ferrour*.

All Chymicall works, and operations whatsoever hitherto done vsually, by fire of wood, or charcole, may by these new inuentions, meanes, instruments, or operations, be made, wrought, or done by fire made with Sea-cole, pit-cole, and other the priuiledged fuels.

The Models of all, or most engins, and instruments before mentioned, remaine in the custody of the said M. *Ferrour*, and had bene now expressed in Print, but that the shortnesse of time limited for the Impression hereof will not permit. To expresse the Furnaces by modell is needlesse, in regard that
some

Some of them haue been already set vp by mee the now *Patentee*; and beside, they may be varied into so many seuerall formes and figures, according to the seuerall humors of the owners, as cannot be well expressed by models.

The Charge of an Iron-worke, or Furnace.

1 **A** Reasonable, or conuenient house close by the mine, to set the furnace in, so as carriage of the Ewre shall be therby saued: the charge of that house cannot be great.

2 The Furnace it selfe to worke withall (which shall do as much, or more then any Furnaces now vsed with char-cole) may bee set vp in the Country, for lesse then ten pounds charges, if their Fire-stone bee not fetched too farre.

Vpon decay of the Furnace in the fire-stone or hearth, the one end of the Furnace may bee pulled downe, and a new fire-stone, or hearth put in, and the Furnace re-edified and built all againe for forty shillings charge, or lesse.

The Furnace beeing a winde-furnace (which is best) saue the charge of the bellowes, and of a milne to make them blow. And the Engine to raise the hammer for the Finery and Chaffery, by helpe of one man, saue the charge of the milnes for the Finery and Chaffery: and if the Engine, Finery and Chaffery be set vp in the place where the Furnace to make Sow-Iron is, which may well be done; it will saue the charge of infinite carriage of cole, stone, and Sow-Iron.

The treatise

The Furnace may be so contriued, that it may serue also for Finery, and Chaffery; so as the Sow-Iron may bee fined at one time, and in one and the same Furnace, where it is made Sow-Iron.

After the Furnace commeth to full heate, which will be after 8 or 9 dayes, or fewer, heating and nealing by degrees, euery tun of Sow-Iron will not require, for the most part, aboue a Tun of pit-cole to be made wihall.

Whereas an Iron worke cannot be well set vp, and set on worke, after the vsuall manner, without a 1000 pound, or 1500 pound dis-burserment, and stocke; now, by this new Inuention, an 100 £ stocke will performe as much with Sea-cole, and the new-deuised Furnaces, hauing a conuenient house to set the Furnace in.

FIN IS.

